

7E4094

Roll No. _____

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B. Tech. VII Semester (Back) Examination, Nov-Dec - 2011

**Computer Engineering
7CS4 Artificial Intelligence**

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 24

Instructions to Candidates:

Attempt any five questions selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Explain how the Branch-and-Bound technique could be used to find the shortest solution?
- b) Analyze the DFS algorithm, also give example in which DFS is better than BFS.

OR

1. a) Solve the 8 - puzzle using hill climbing. Find heuristic function that makes this work. Explain how it works on the following example.

start

1	2	3
8	5	6
4	7	

Goal

1	2	3
4	5	6
7	8	

- b) Analyze the Breadth first search (BFS) and also give an example in which BFS is better than DFS.

Unit - II

2. Write an algorithm to convert WFF in to clause form, also analyze the algorithm. Explain monotonic and non-monotonic reasoning.

OR

2. Consider the following Knowledge base

$\forall_x : \forall_y . \text{cat}(x) \wedge \text{fish}(y) \rightarrow \text{likes-to-eat}(x, y)$

$\forall_x : \text{calico}(x) \rightarrow \text{cat}(x)$

$\forall_x : \text{tuna}(\text{charlie})$

tuna (Hevb)

calica (Rush)

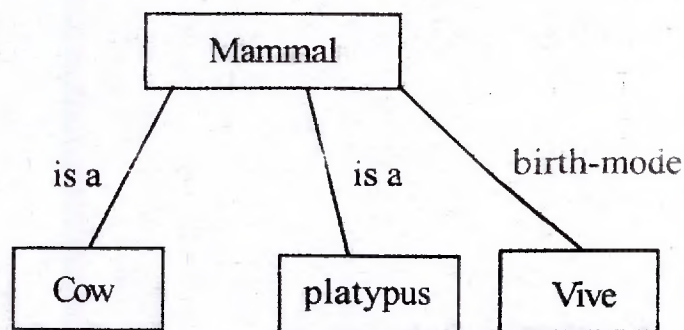
- Convert these wff's into Horn clause.
- Convert the Horn clause into Prolog program.
- Write a PROLOG query corresponding to the question, "What dose puss like to eat" and show how it will be answered by your program.

Unit - III

- Explain Dampster-Sttafor theory.
 - Construct partitioned semantic net representation for the following
 - Every batter hit a ball
 - All the batters like the pitches.

OR

- Show a conceptual dependency representation of the sentence "John begged mary for a pencil". How does this representation make it possible to answer the question "Did John talk Mary"
 - Property inheritance is a very common form of default reasoning. Consider the Semantic net.



- How could the information in this network be represented in a JTMS.
- What will happen when the additional fact that the platypus lays eggs is inserted in to this system?

Unit - IV

4. a) What are alpha-beta cut offs?
- b) Explain MINIMAX search procedure giving an example up to three-ply.

OR

4. a) What is natural language understanding? Write major advantages of natural language processing.
- b) Explain various steps involved in natural language understanding process.

Unit - V

5. a) Compare and contrast case based reasoning and learning by analogy.
- b) What is learning in Neural Networks?

OR

5. a) Explain the architecture of rule-based expert system.
 - b) Differentiate the following ;
 - i) Expert system and decision support systems
 - ii) Expert systems and neural networks.
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